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BABCOCK IP

Claim Amendments

1. (original) A printer including a transceiver adapted to communicate with transponders, comprising:

a printhead;

a media conveyance adapted to transport a series of discrete media to said printhead and through a transponder operating region, at least some of said media including a transponder;

a near field coupler configured to generate a near field effect to couple with the transponder for data transfer;

the near field coupler having a plurality of lines electrically interconnected in parallel, and a spaced away ground plane.

2. (original) The printer defined by claim 1 wherein the near field coupler is formed as traces on a printed circuit board.

3. (original) The printer defined by claim 1 wherein the near field coupler has a characteristic impedance and the near field coupler is terminated by a terminating resistor having a different characteristic impedance.

4. (original) The printer defined by claim 1 wherein the plurality of lines are arranged parallel to each other.

5. (original) The printer defined by claim 1 wherein at least one of the plurality of lines has a zig-zag configuration.

6. (original) The printer defined by claim 1 wherein said printhead is positioned and configured to print on or adjacent said transponder while it is still in said transponder operating region.

7. (original) The printer defined by claim 1 wherein said printhead is positioned and configured to print on or adjacent said transponder when it is outside of said transponder operating region.

8. (original) The printer defined by claim 1 adapted to feed a web of spaced transponders through said transponder operating region, and wherein said printer communicates with a transponder located in said transponder operating region but concurrently not with another transponder located outside of said transponder operating region.

9. (currently amended) A system comprising an RFID transceiver and adapted to communicate exclusively with a single transponder located in a predetermined transponder operating region, said system comprising:
a near field coupler having a spatially selective near field property extending into the transponder operating region;
the system configured to establish at predetermined transceiver power levels a mutual coupling which is selective exclusively for a single transponder located in said transponder operating region.

10. (original) The system defined by claim 9 wherein the near field coupler has a plurality of electrically parallel lines.

11. (original) A method of establishing communication between a transceiver and a single transponder located in a predetermined confined transponder operating region, comprising:
generating a near field in an transponder operating region which varies in response to a radio frequency input signal; and
establishing at predetermined power levels of the transceiver a mutual coupling which is selective exclusively for a single transponder located in said transponder operating region.

12. (original) The method defined by claim 11 including locating forming the near field with a coupler having a plurality of lines electrically connected in parallel.

13. (original) The method defined by claim 11 including transporting a web of labels through said transponder operating region, at least some of which labels have an RFID transponder, and wherein said method includes printing on said labels.

14. (original) The method defined by claim 11, further including the step of incrementally advancing the transponder within the transponder operating region, if the transponder is located at a field strength gap of the transponder operating region.

15. (currently amended) A near field coupling device, comprising:
a plurality of lines electrically interconnected in parallel;
a ground plane spaced away from the plurality of lines; and
a terminating resistor coupled to the lines, the terminating resistor selected not to match a characteristic impedance of the plurality of lines;

16. (original) The near field coupling device of claim 15, wherein the plurality of lines are formed as at least a first trace on a printed circuit board and the ground plane is formed as a second trace on a printed circuit board.

17. (original) The near field coupling device of claim 15, wherein at least one of the plurality of lines has a zig-zag characteristic.

18. (currently amended) The near field coupling device of claim 15, wherein the plurality of ~~of~~ lines are spatially aligned coplanar and parallel to each other.

19. (original) The near field coupling device of claim 15, wherein the length, width and interspacing of the plurality of lines is selected for a desired bandwidth.

20. (canceled)

21. (original) A near field coupler for communication with an transponder located in a transponder operating region, comprising:

a near field coupler receiving an RF communication signal and configured to produce an array of spaced near field concentrations responsive to the RF communication signal, the spacing of said near field concentrations along a predetermined direction being significantly less than a smallest dimension of said transponder in said predetermined direction such that said transponder overlaps and is excited by a plurality of said field components when located in said transponder operating region.

22. (original) The coupler of claim 21 wherein said near field concentrations are formed by lines configured in an array with a spaced parallel geometry.

23. (original) The coupler of claim 22 wherein said lines comprise leaky edges formed in a microstrip coupler.

24. (original) The coupler of claim 22 wherein said lines have a zig-zag configuration.

25. (original) The coupler of claim 22 wherein said lines are formed as a trace on a printed circuit board having a separate ground plane.

26. (original) A method for communication with an transponder, comprising the steps of:

a)positioning an transponder in a transponder operating region with a transponder axis oriented along a predetermined direction, the smallest dimension of said transponder in said

predetermined direction being significantly less than a dimension of said transponder operating region in said predetermined direction;

b)with an RF communication signal, forming an array of near field concentrations in said transponder operating region, said near field concentrations extending transversely to said predetermined direction and spaced along said predetermined direction; and

c)communicating with said transponder with said RF encoding signal,

d)the spacing of said near field concentrations in said predetermined direction being significantly less than said smallest dimension of said transponder in said predetermined direction such that said transponder overlaps and is excited by a plurality of said near field concentrations when located in said transponder operating region.

27. (original) The method of claim 26, wherein a plurality of transponders are individually communicated with by sequential passage through the transponder operating region via a media conveyance.

28. (original) A method for communication with an transponder comprising the steps of:
- positioning the transponder over a spaced array of near field concentrations of an RF communication signal, the spacing of said near field concentrations being such relative to the dimensions of said transponder that said transponder overlaps and is excited by a plurality of said near field concentrations.

29. (original) A method for communication with an transponder comprising the steps of:
- positioning the transponder over a parallel array of leaky edges having near field concentrations of an RF communication signal, the spacing of said near field concentrations being such relative to the dimensions of said transponder that said transponder overlaps and is excited by a plurality of said near field concentrations.

30. (original) A method of adaptively communicating with an transponder comprising the steps of:

- positioning the transponder contiguous with a pattern of spaced near field concentrations of an RF communication signal, the pattern having at least one undesired low energy zone within which transponder communication is not optimally performed,

- exciting the transponder with the near field concentrations;

- confirming valid communication;

- if valid communication is not confirmed, moving the transponder a distance;

repeating said exciting, confirming, and moving actions until a valid communication of the transponder is confirmed.

31. (original) A method for communication with transponders having a range of sizes from smallest to largest, comprising the steps of:

a)with an RF communication signal, forming an array of spaced near field concentrations in a transponder operating region, the spacing of said near field concentrations being less than the smaller of the length and width dimensions of said smallest transponder such that all transponders in said range of sizes overlap and are excited by a plurality of said near field concentrations when located proximate said transponder operating region;

b)positioning proximate said transponder target sector a transponder having a size in said range of transponder sizes, and

c)communicating with said transponder.

32. (original) A method for communication with an transponder, comprising the steps of:

- with an RF communication signal, forming a near field concentration pattern in a transponder operating region larger than the transponder,

- locating a transponder at a first position in said transponder operating region;

- determining a first signal power level operationally effective to communicate with said transponder when located in said first position,

- storing said associated first power level and transponder position;

- positioning said transponder or a similar transponder in a second position in said transponder operating region;

- determining a second signal power level operationally effective to communicate with said transponder when located in said second position,

- storing said associated second power level and transponder position;

- operationally communicating with a series of transponders located in said first and second positions in said transponder operating region using the stored first and second signal power levels respectively associated with the first and second positions of transponders in said transponder operating region.

33. (original) The method of claim 32, further including the step of storing a type of the transponder.